Research Paper | Education | E-ISSN No : 2454-9916 | Volume : 10 | Issue : 5 | May 2024

NOAM CHOMSKY'S TRANSFORMATIONAL GENERATIVE GRAMMAR FOR BEGINNERS

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INTRODUCTION

Noam Chomsky's The Syntactic Structures (1957) introduced to the world the most revolutionary and influential of all modern linguistic theories namely Transformational Generative Grammar. The pit falls of the so far introduced structural grammars, mainly corpus bound, triggered Chomsky to launch the TG Grammar. Chomsky argues that the structural grammars such as IC analysis and P.S Grammars were not generative. They never recognized the competence of the speaker to produce an infinite number of utterances from a finite set of rules. The structural grammarians, instead, entered when the speaker has completed his utterance to segment the utterance into different constituents through an inductive method. The structural grammars also fail to account for ambiguities, homonymy, and the relationship between sentence types such as Active and Passive, Declarative and Interrogative, Affirmative and Negative etc.

A good grammar, Chomsky argues, must establish the relationship between various sentence types and account for the differences in deep and surface structures. Chomsky through Transformational Generative Grammar attempts to answer many of the questions, left unanswered by the Structuralism. However, Chomsky also warns his readers that his Grammar TGG is not the ultimate word on grammar for there will be more grammars in the wake. Hence, Chomsky alerts his readers, never run after a bus, woman or TG grammar for there would another one along in a moment.

The name TG Grammar suggests that there are two aspects to the theory: Transformational and Generative. They do not depend logically on each other but gains plausibility through the interaction of the two. P.S Grammars, Chomsky states that could only provide the structures underlying sentence but the rewrite rules do not generate the finished sentences that underlies the structure. PS grammars can never generate sentences such as:

1. The manager did not write the letter.
2. Did the manager write the letter?
3. Who wrote the letter?
4. The letter was written by the manager.

Only Transformation rules can arrange, delete or add sentences. Besides the under lying structure generated by Rewrite rules can also generate grammatical by unacceptable sentences like:

The table will kill the man under the tree.

On the other hand, TG Grammar cannot do anything a native speaker cannot do. It is a device that mirrors the judgments that a native speaker would make about his language. T.G. Grammar, thus, attempts to make explicit and conscious what the speaker does intuitively and unconsciously. It is ultimately the simple observation that explains our linguistic behavior.

Transformation includes the following;

1. Rearrangement of elements: E.g., John can swim→ Can John swim (a statement is transformed to a question)
2. Addition of elements: E.g., John can swim→John cannot swim (the negative element 'not' is added)
3. Deletion of elements: E.g. You will behave yourself Behave yourself (statement is converted to imperative)
4. Substitution of elements E.g., I did it myself (myself is substituted for 'I')

Transformational Generative Grammar is organized on three components:

1. The Base/Syntactic component: It contains a set of rewrite rule through which the underlying string of an utterance is generated.
2. The transformational component: It contains a set of Transformational rules that convert one phrase marker into another and converts the deep structures to surface structures.
3. The Morphophonemic component: Operates on sentences after all transformations have been completed to give the string of symbols its final sentence shape.

The system of PS rules/ Rewrite rules generates a large but finite number of underlying strings. However, the underlying string is not the finished product i.e., the sentence. To convert the underlying string of symbols to the final sentence different Transformational Rules (T-Rules) must be applied. For e.g. PS rules generate the following underlying string for the sentence "The boys had been reading books". We start with the initial symbol 'S' and apply rewrite rules.

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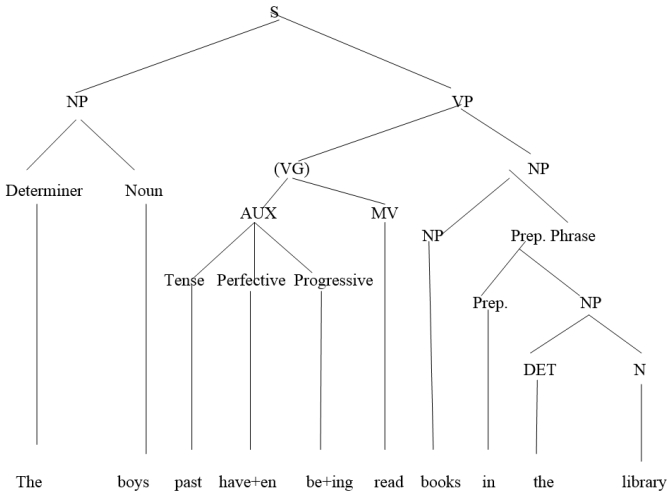


(S= Sentence, NP = Noun Phrase, VP = Verbal Phrase, AUX = Auxiliary, MV=Main Verb)

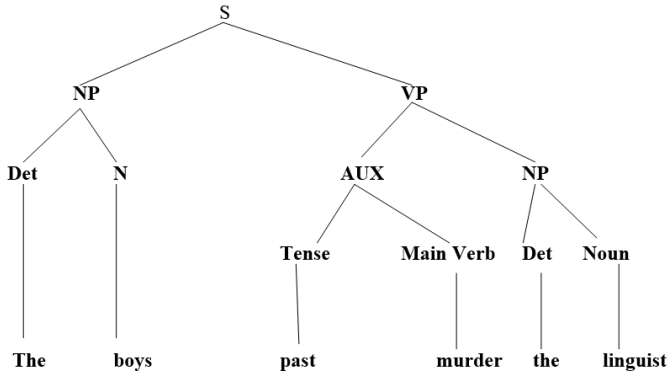
The string of symbols generated by the operation of rewrite rules is not the finished product because some elements or constituents like 'past', 'en' and '-ing' are not in their proper place. They are affixes as well as bound morphemes. They should be attached to another morpheme to gain its meaning. But "past +have' does not produce 'had'. We need a T- rule, therefore, to posit them in their desired spaces. The rule that changes the position of the affix in transformational grammar is known as "Affix Switch Rule" or as Chomsky labels "Flip Flop Rule". The rule tells wherever you find affix+ verb should be transformed to Verb + affix. Thus **Affix + Verb Verb+ affix**. It is an obligatory T rule that functions at all underlying strings. Thus, by the application of the Affix switch or Flip Flop rule we have the following string:

The-boys - **have+past –be+en -read+ing** –books -in –in – the – library. till it is not the final sentence. The Morphophonemic rule is applied here to combine the bound morphemes. Thus the final sentence, 'The boys have been reading books in the library' is generated. Flip Flop rule and Morphophonemic rules operate at the level of the auxiliary.

Chomsky differentiates between **Kernel** and **Non Kernel** sentences to bring out the relation between different sentence types. A Kernel sentence, Chomsky calls 'affirmative, declarative, simple and active sentences of a language. Chomsky argues that the basic sentence type is the kernel and all non kernels are nothing but the derivations from the kernels through the operation of various T-rules. In this way Chomsky depicts how the sentences of a language are related. For. e.g., any speaker of English knows that the passive is nothing but the paraphrase of the active. But the structural grammarians would treat them as totally different sentences and give separate analysis of the two and does not tell how they are related. Chomsky handles the relationship between the active and the passive by stating that if "S1" is a grammatical sentence of the order, NP1 - Aux – MV- NP2, then the corresponding string of the order, NP2 - AUX – Be+en - MV – by – NP1 is also a grammatical sentence. For e.g TG Grammar considers the sentence:

The linguist was murdered by the students a non kernel sentence derived from the kernel

The students murdered the linguist by the operation of the passive T-rule. TG grammar generates this sentence through the application of rewrite rules;



The next step converts this string to passive by the application of the passive T-rule: NP2 – tense—be+en – MV - by – NP1

The linguist – past – be+en -– murder – by - the students.

Now we apply the Flip Flop rule to generate the following string:

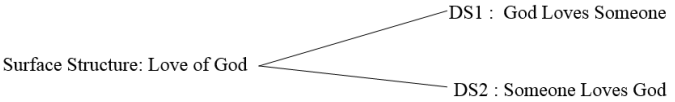
The – linguist – be+past – murder+en – by – the – students

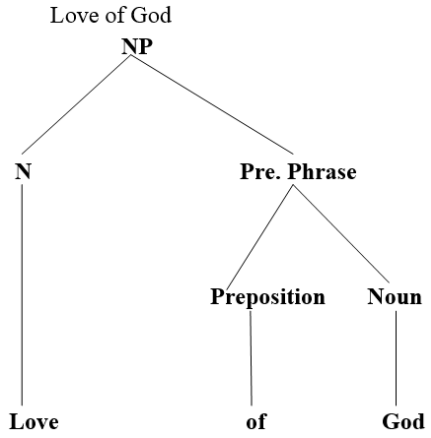
Now we apply the morphophonemic rule to generate the final sentence:

The linguist was murdered by the students. (Along with the morphophonemic rule, the concord rule or subject verb agreement rule is also applied).

However, it is not necessary that all actives should be transformed into passives. Thus Passive T-rule is an optional T-rule.

P.S Grammars depend exclusively on a set of rewrite/recursive rules. But such a grammar is highly inadequate to handle ambiguities. For e.g., the Noun Phrase "Love of God" has one surface structure with different deep structures





God Loves Someone ⟶ Love of God

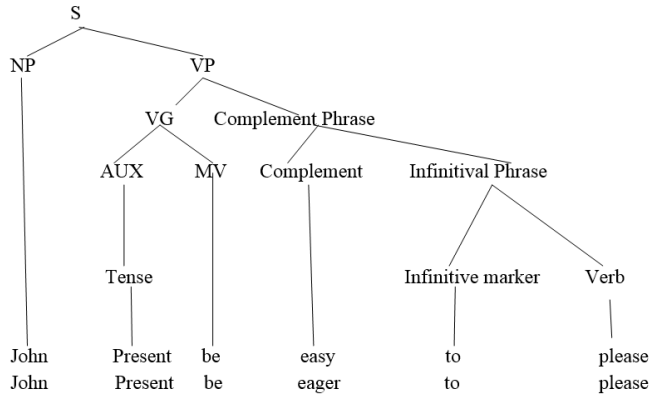
Someone loves God ⟶ L Love of God

Nominalization transforms a sentence into a noun phrase i.e., it suppresses the idea contained in a sentence to a Noun Phrase.

A different problem is presented by the following sentences.

1. John is easy to please
2. John is eager to please

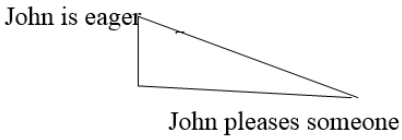
They are identical in construction with one surface structure.



While the surface structures have exactly the same constituent structure and the same labels on nodes, they are in fact understood by people to be very different in the relationships between their parts. John is, in some sense, the object of please in (l) but the subject of please in (2). Transformational grammar would claim that the two sentences, although possessing identical surface structures, differ in that they must be derived from different underlying syntactic structures (i.e., different K-initial Phrase Markers).

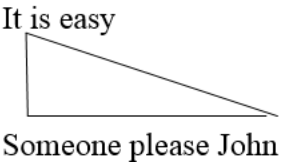
The deep structures of the above sentences are different. In the first sentence John is the object of pleasing, so the deep structure would be 'It is easy to please John. Someone pleases John'. But in the second John is the subject of pleasing, so the DS would be 'John is eager to please. John pleases someone'. These differences could never be brought out by any structural grammar. TG grammar, on the other hand, brings out the underlying meaning by applying the T rule called 'Embedding', where a constituent structure is embedded into the matrix to derive the surface structure.

'John is eager to please' is a transform of two kernel sentences:



Here, the constituent, John pleases someone is embedded into the matrix to generate the transform "John is eager to please'.

John is easy to please is a transform of two kernel sentences



Here 'it is easy' is embedded into the matrix to derive the transform 'John is eager to please'.
The difference between the above two sentences is in the place of embedding.

Another problem encountered by PS grammars is that they could not solve constructional ambiguity properly. A sentence like 'Flying planes can be dangerous' is ambiguous for we cannot tell what exactly is dangerous: 'the planes that fly or the act of flying planes': Transformational grammar shows this difference in the matrix and the constituent sentences as well as in the place of embedding.

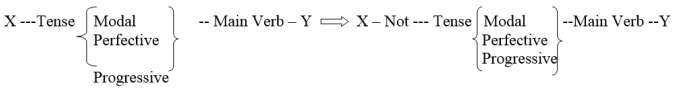
On the first meaning we have kernel sentences like:
……can be dangerous.
Someone flies planes.

TG grammar transforms the second sentence into flying planes through the T-rule Nominalization to get the transform 'flying planes' and then insert it in the place of subject NP to have 'Flying planes can be dangerous'.

On the Second meaning, the kernel sentences will be
Planes can be dangerous
Planes fly

Here we apply the relative transformation which gives the transform 'Planes that fly can be dangerous', then transforms 'planes that fly' into 'flying planes' through Nominalization and place it in the subject NP slot to generate the sentence "Flying planes can be dangerous".

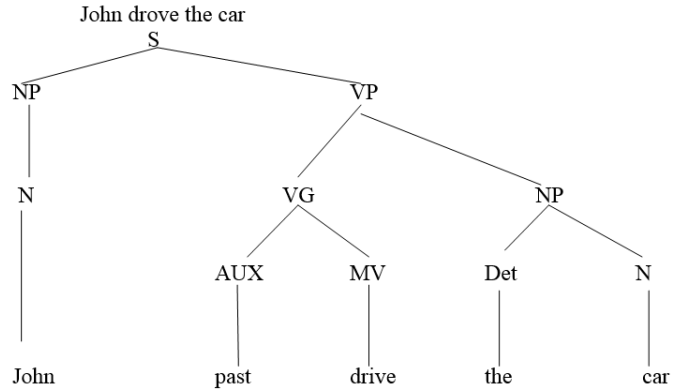
Chomsky handles the relationship between different sentence types through the operation of different T rules. For e.g., the relationship between affirmative and negative sentences is generated through the Negative Transformation rule which says:



This rule tells that to transform an affirmative into negative, we add the element 'Not' to the Auxiliary and apply other relevant T rules to generate the surface structure.

For e.g. Chomsky argues that the negative 'John did not drive the car' is a transform of the kernel sentence 'John drove the car' through the operation of Negative transformation rule.

We begin with the rewrite rules to generate the deep structure.



To this underlying string we apply the Negative T-Rule to get the string:

1. John – not – past – drive - the – car.
Here a different problem emerges. There is no constituent to which 'Tense-past' – can be attached. To resolve this issue Chomsky introduces the 'Do- support rule'. Thus we have;

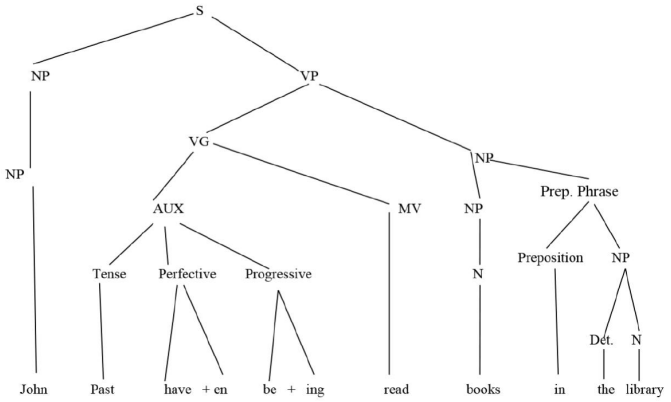
2. John – not – past – do- drive – the – car. Now we apply the Affix switch/Flip Flop rule to have

3. John – not - do - past – drive – the- car.
However, the negative element 'not is not in its proper place. Here the affix hope rule enters and by which we get:

4. John – do – past – drive – the – car. The Morphophonemic rule converts the constituents into the final sentence;

5. John did not drive the car.
This is the way the surface structure John did not drive the car is generated from the kernel/deep structure 'John drove the car'. Let us examine another sentence;

John had not been reading books in the library.
The kernel of the above sentence is
John had been reading books in the library.



John Past have+ en be+ing read books in the library

By Negative Transformation rule:
John – not – past –have+en – be+ing – read – books – in –the – library

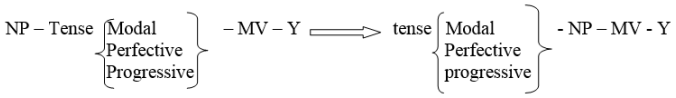
By affix switch/Flip flop rule:
John – not —have+ past– be+en – read +ing – books – in –the – library

By Affix hop rule:
John ——have+ past– not - be++en – read +ing – books – in –the – library

By Morphophonemic rule:
John had not been reading books in the library.
(Here, 'Do support rule' is not applicable since tense can be attached to the auxiliary 'have').

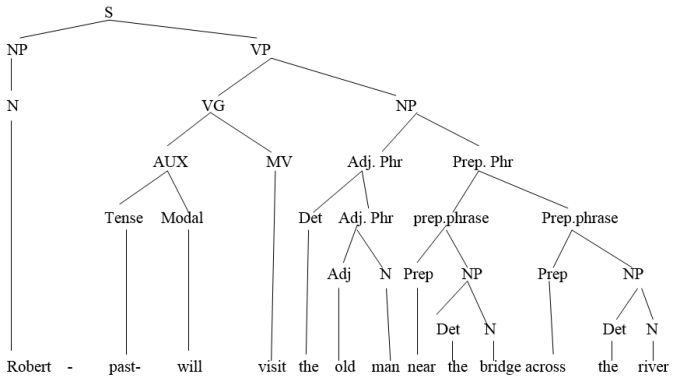
Interrogative Trasnsformations:
Interrogative and declarative sentences are also related just like active-passive or affirmative-negative. It is the interrogative transformation rule that transforms a declarative sentence into an interrogative. Interrogatives are of two types: Yes/No and W/H questions.

For Yes/No interrogatives, the following T rule is applied:



This rule tells that to transform a declarative to interrogative, move the auxiliary to the left of subject NP.

E.g. Would Robert visit the old man near the bridge across the river?
The Kernel of this sentence is;
Robert would visit the old man near the bridge across the river



By applying the interrogative T-rule;

Past –will – Robert – visit – the- old – man – near – the – bridge – across – the – river?

By Flip Flop Rule:

Will+ past - Robert – visit – the- old – man – near – the – bridge – across – the – river?

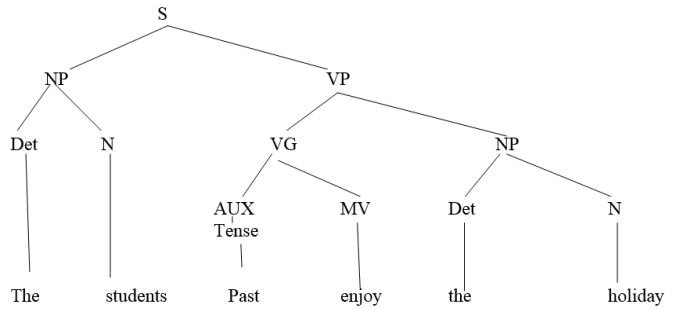
By Morphophonemic rule:

Would Robert visit the old man near the bridge across the river?

Let us examine a different type of construction.

Did the students enjoy the holiday?

The kernel of the above is
The students enjoyed the holiday



By the interrogative T-rule:

Past- the- students- enjoy – the – holiday?

By Do support rule (we need an aux to attach the tense)

Past-do - the- students- enjoy – the – holiday?

By Flip Flop Rule

Do + past - the- students- enjoy – the – holiday?

By Morphophonemic rule;

Did the students enjoy the holiday?

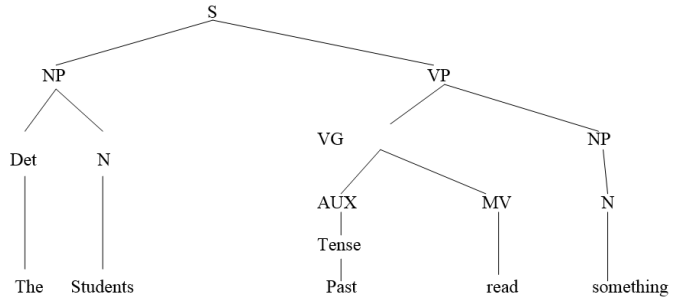
W/H Questions

W/H questions begin with a question word and therefore require not only the shifting of the auxiliary to the left of the subject NP but also a W/H substitution and question tag. W/H questions are derivations of Yes/No questions: John saw Mary at some time⟶Did John see Mary- when?⟶ When did john see Mary?

W/H transformation examples:

What did the students read?

Kernel Sentence of the above is : The students read something.



W/H substitution. By this rule we substitute 'something' by 'what':

The – students – past – read –what

Interrogative Transformation rule;

Past – the – students – read - what

The question word 'what' has to be brought to the left of subject NP. So we apply

W/H Fronting rule: What – past –the – students – read?

By 'Do Support Rule:

What – do –past – the – students – read ?

By Flip Flop Rule:

What – do+past – the – the – students- read ?

By Morphophonemic rule:

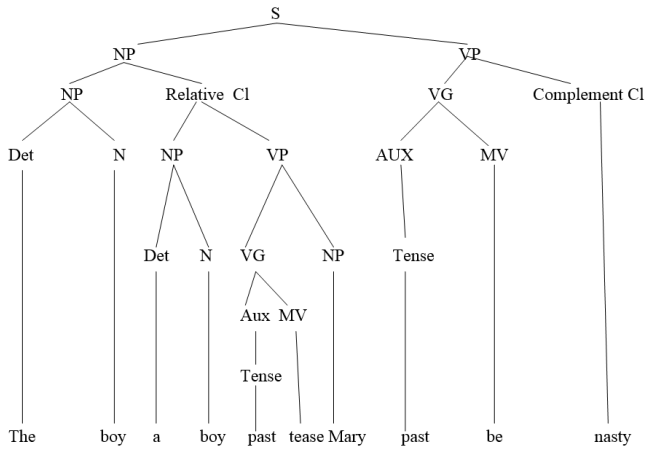
What did the students read?

Relative Transformations

The sentence "The boy who teased Mary is nasty" is a transform of the following sentences:

The boy teased Mary. and
The boy is nasty.

By replacing 'the boy' with a relative pronoun we have the following construction called Relative Pronoun substitution: The boy [a boy teased Mary] is nasty.



By Relative Pronoun substitution ('a boy' is replaced by the RP 'who')

The- boy – who - past - tease -- Mary - past - be -- nasty

By Flip Flop rule:

The - boy - who - tease+ed -- Mary - be+past - nasty

By Morphophonemic Rule;
The boy who teased Mary is nasty.

The basic goal of TG grammar is to account for what the speakers know about their language. Every speaker is aware of ambiguity and paraphrase and they cannot be accounted for in terms of structural signals. It implies that a speaker of a language in some unconscious intuitive way know the internal structure/deep structure and relationship of one part with another or the entire sentence. This knowledge does not depend on any prior exposure to each particular sentence. For e.g., the following sentences

Colourless green ideas sleep furiously

Sleep furiously colourless green ideas

have never occurred in the history of English language. Yet we know that the first sentence is grammatical, though not acceptable and the second is both ungrammatical and unacceptable. Thus every speaker has the competence to understand whether a sentence is grammatical or not, he can decide whether two or more sentences or the same sentence have more than one meaning.

T.G. grammar rejects the structural theory of language acquisition i.e., structuralism hold that a child learns the language of the society by associating certain language forms with the situations that are called forth. T.G. grammar argues that such a concept does not account for the recursive characteristic of language. For e.g, the sentence, 'The dragon rejected the banana with a contemptuous snort and a flip of his tail' a totally new sentence, yet one can interpret it.

Structural grammarians were interested in discovery procedure. They stood outside the language under examination and came to objective generalizations. TG grammar on the other hand accounts for linguistic competence, the kinds of judgments speakers make on their language. TG grammar cannot do anything that a native speaker cannot do. Thus, TG grammar attempts to make explicit and conscious what the speakers do intuitively and unconsciously.

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